



“ROLE OF ICT FOR RURAL DEVELOPMENT IN KARNATAKA”

Raghavendra R

Vice-Principal, Koshys Institute of Management Studies, Bangalore

ABSTRACT

Information and communication technology is the powerful and productive system that transforms all human activities, including rural economy. Information and Communication Technology (ICT) has increased its acceptance in last few years. ICT accounts to the convergence of audio, video and data services supported by various service providers. Converged networks have merged the services of telephone, television, internet, cellphone and computer networks requiring different infrastructure and channels into a single communication network. ICT acts as a catalytic intervention for empowering rural India as it accelerates economic development in rural areas by helping the people in accessing the information in order to bridge the gap. This paper aims to determine the usage and adoption of ICT in several areas of rural development and supporting initiatives of Ministry of Rural Development and e-governance schemes. The study also brings forward the achievements and Challenges in the adoption of ICT in rural areas of Karnataka. The methodology adopted is a quantitative analysis conducted through secondary data (online surveys and paper surveys with information regarding available amenities in rural areas).

Keywords - ICT, Rural Development, Converged Networks, Economy, Empowerment, Karnataka

I. Introduction

Rural areas and villages are among those areas that need information technology development. Information technology can have an important role in promoting the prosperity in economics, social, cultural, and political aspects of rural areas. Information and Communication Technology (ICT) is a well-known service sector in the world which can be utilized by India in acquiring top position as Indian minds have been appreciated since the beginning. In order to achieve the targeted GDP of India it is necessary to accelerate the rural development rendering the rural mob to become active participant in the course of development of India as a whole. There are several problems in rural areas and several policies combating around 600,000 villages for rural development. But still all the policies are not directly meeting the needs of rural people due to lack of information and awareness. Information and Communication Technology (ICT) represents a broad and continually evolving range of elements that further include computer hardware and software, television, radio, mobile phones, personal computers, kiosks and policies that govern these media and devices.

Percentage of Rural & Urban Population in Karnataka

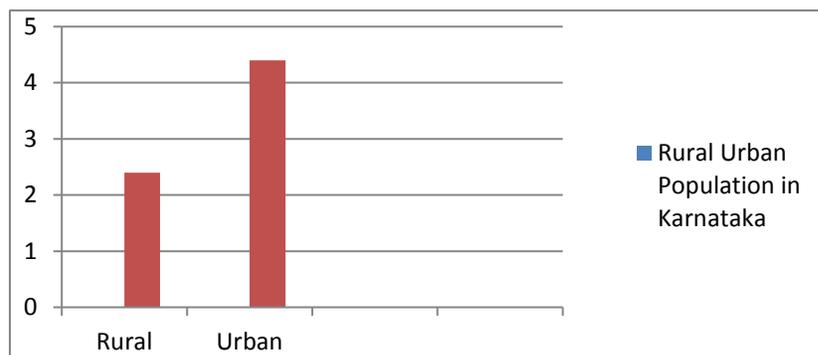


Fig 1: Showing 2.35 crore people reside in urban areas, 3.75 crore in rural areas in Karnataka

Karnataka is now among the most urbanized States in India with more than 38 % of its population living in urban areas, says 2011 Census of India. The level of urbanization in Karnataka increased by 4.58 %, from 33.99 % in 2001 census to 38.57 % in 2011, while the level of rural population declined from 66.01 % to 61.43 %. This is the result of a situation where economic activity and job creation become increasingly urban-focused. Of the 6.11 crore population in the State, 3.75 crore people are residing in rural areas and 2.35 crore in urban areas. Around 31.8 % of the country's population lives in urban areas. The Census shows Delhi to be the most urbanized State in India, with an urban population of 97.5%. Other States with high percentage of urban population are Tamil Nadu - 48.45%,

Kerala - 47.72%, Maharashtra - 45.23%, Gujarat - 42.58% and Punjab - 37.49%. In rest of the States the urban population is less than 35%. Bihar is ranked last with 11.3 % of urban population

II. ICT: The National Picture

ICT has played a major role in the Indian economy. As a proportion of national GDP, IT/ BPO sector revenues have grown from 1.2% in 1997-1998 to an estimated 6.4% in 2010-2011. Its share of total Indian exports (merchandise plus services) has increased from less than 4% in 1997-1998 to 26% in 2010-11. According to NASSCOM India's IT services and BPO exports were predicted to grow 16-18% in 2011-12 to \$70 billion. India's total exports in 2011-12 were US\$ 300 billion. Today, the industry offers direct employment to 2.9 million and has the capacity to provide direct employment to around 7.5 million people by 2020 (estimated total direct & indirect employment by 2020 is 30 million).

III. Major ICT initiatives across Rural Karnataka:

While there are many ICT initiatives in the state some of the major ones are detailed below:

- a. BHOOMI:** The Bhoomi project implemented by the Department of Public Administration and Revenue (DPAR), makes available a computerised record of Rights, Tenancy and Crops (RTC) to all landowners at a kiosk in the taluk (sub-district administrative units) office, on payment of \$0.25 (approx.) per RTC. In recent times, the DPAR is promoting private franchise models in which the franchisees have to bear the cost of the infrastructure and Internet connection. They can charge \$0.3 to \$0.5 (approx.) per RTC against the \$0.25 charged at the taluk office. This is one initiative that has the capability of breaking even on Operation and Management (OM) costs, primarily because of the essential nature of the service and the volumes (each landowner requires atleast one set of certificates per year and has to take as many certificates as the number of survey numbers in which he has landholdings). The Education department has three parallel ICT programmes for rural schools. The 'Mahiti Sindhu' programme addresses computer education for high school (std VIII, IX, X) students and teachers in 1000 schools of Karnataka. Each of the 1000 schools have been provided anywhere between six to fifteen computers with power backup, a printer and basic software. Internet connectivity is available and a person has been appointed in each school to impart computer education. In association

with the Azim Premji Foundation (APF), the Education department is creating Computer Assisted Learning Centers (CALCs) in government primary schools across the state. APF makes a range of multi-lingual CD's to assist primary school children in grasping their curricular subjects (computer aided education). Each CALC has 4-5 computers, a printer and UPS. Intel has tied up with the Education department to impart training to teachers to innovatively use computer technology to enhance student learning in the 1000 schools under the 'Mahiti Sindhu' programme. Apart from these, the Indian Space Research Organisation (ISRO) has recently launched a satellite dedicated to education services. 800 government primary schools in Chamarajanagar district have been selected for the pilot implementation of an interactive distance education project. Each school has got one computer and satellite connectivity. The Department of Agricultural Marketing regulates market practices for agricultural commodities. Quantities and prices of agricultural products traded in the different markets are available on a website that is updated daily. 112 of the 145 Agriculture Produce Market Communities (APMCs) have a computer which can be accessed by farmers to see the daily prices of the agricultural commodities. The Safal Fruit and Vegetable Auction Market (SFVAM) of National Dairy Development Board have set up 100 farmers' associations or collection centers for auctioning of fruits and vegetables. The associations are being given a computer and required communication infrastructure in a phased manner.

- b. Deployment of WIFI in Gram Panchayats across Karnataka State - ICT Society** under the Department of Information Technology, Bio Technology and Science & Technology Government of Karnataka is implementing / deployment of Wi-Fi hotspots using NOFN backhaul of BSNL at 2150 Gram Panchayats across Karnataka. Each GP's will be having Wi-Fi connectivity with 4 Access Points (4AP's) with solar powered system, antenna, pole and other accessories. Each GP's will be having Wi-Fi coverage area of 500 Sq.mtrs with the range of 120 to 150 mtrs. This Wi-Fi project is implemented through CSC e-Governance Services India Limited. Wi-Fi connectivity at GP's is supporting all digital services for day to day activities of citizens of GP's that is Land Records, Tax Payments, Electricity/Water/Telephone bill payments, Railways / Bus ticket reservations & Insurance payments etc., The services are given by Government of Karnataka and Government of India. Internet connectivity access in rural areas is supplied through Wi-Fi.

c. NEMMADI - Nemmadi is the first and the largest G2C e-governance project which offered to rural citizens, a range of 38 services such as RTC, Caste, Income, Residence, Birth, Death certificates etc. These certificates enabled the citizens to apply for benefits under various government schemes, apply for admission to educational institutions and government jobs etc. Across the state approximately 800 centers were providing the service.

d. CHETANA - The Departments of IT, BT and S&T, Government of Karnataka has made a mandatory policy to nurture and mentor the local talents and to empower them with high-end technology to support their wings to the dreams. With this aim, the departments have crafted a program titled "Chetana" which was launched in April 2016. This program is targeted at enabling Girls who have topped in Secondary School. These "Chetana – Scholars" will be hand-held for two years post-the camp.

IV. The basic challenges realized during implementation of ICT in rural areas across Karnataka are:

- Illiteracy amongst the vast multitude of people.
- Major power-cuts affecting the country-side ranging from 5 to 12 hours every day. Even though uninterrupted power supply systems are used, yet they prove insufficient to cope with the power breakdowns.
- Financing difficulties encountered by the local grass root level institutions as well as by the state governments. Drastic steps are needed to inject funds for the development of the ICT's in the rural areas increasingly by the participation of the private sector.
- Acute shortage of project leaders and guides who could ensure implementation of the ICT's at the grass root levels.
- Unfortunately most professionals want to work in the urban areas where there are ample opportunities available to them for growth as well as prosperity.

In the absence of these resources, development of ICTs in the rural areas will always be very slow.

V. Role of Rural Development Agencies

Different apex bodies and agencies work at national, state and district levels- each having its own role and obligation to work for the betterment of rural areas. Such agencies may undertake various projects or implement government schemes for rural areas either independently or in coordination with other agencies. The listing of various rural development agencies in India (for Karnataka state) is as shown in figure 2

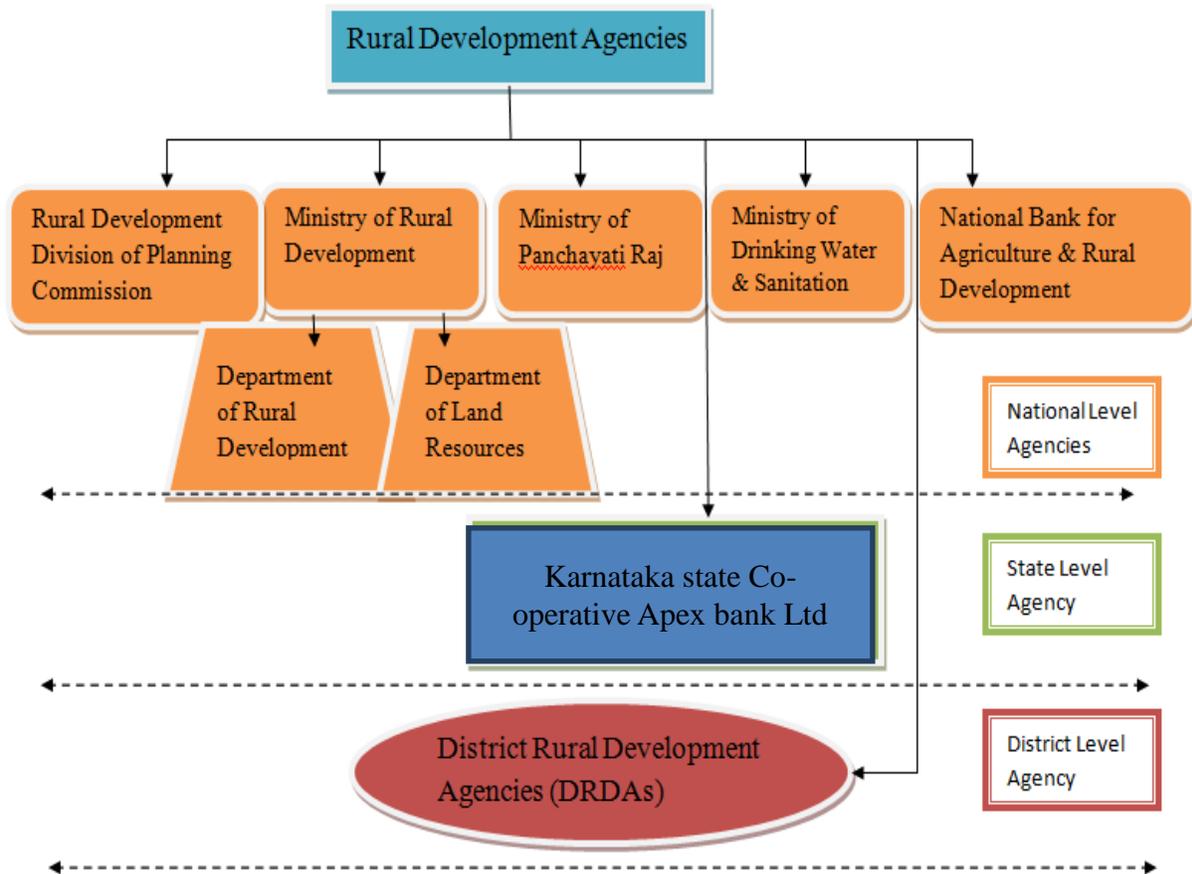


Fig 2: Rural Development Agencies Operating In Karnataka

The responsibilities of the above mentioned agencies are listed below:

- (i) *Rural Development Division of Planning Commission:* The function of Rural Development Division is to provide policy guidance in formulation of annual as well as five year plans for rural development programmes and also establish cooperation with Ministry of Rural Development, National Institute of Rural Development and other agencies.
- (ii) *Ministry of Rural Development:* The role of Ministry of Rural Development in India is the formulation of policies, regulations and acts pertaining to the progress of the rural sector

- including occupation- agriculture, handicrafts and other micro-industries and rural economy. There are two departments under the Ministry of Rural Development:
- a. *Department of Rural Development*: The department aids the provision of training and research facilities, human resource development, and provides functional assistance to the DRDAs and supervises the execution of projects and schemes including housing facility and wages to the rural population.
 - b. *Department of Land Resources*: The main objective of the department is to implement Prime Minister Krishi Sinchayee Yojna (Watershed Development Programme), Digital Land Records Modernization Programme, Technology development and training.
- (iii) *Ministry of Panchayati Raj*: The responsibility of Ministry of Panchayati Raj is to develop state level guidelines for formulation and implementation of Gram Panchayat Development Plans and to facilitate the accountability of Panchayat Raj Institutions (PRIs) through e-panchayats and to ensure social justice and accessibility of other services to rural areas.
 - (iv) *Ministry of Drinking Water & Sanitation*: The main goal of establishing Ministry of Drinking Water & Sanitation is to ensure that every household, government schools and public places have access to safe drinking water and sanitation facilities and support PRIs to safeguard their own drinking water resources and sanitation facilities.
 - (v) *National Bank of Agriculture & Rural Development (NABARD)*: NABARD is an apex body which was established in 1982 replacing Agricultural Credit Department (ACD) and Rural Planning and Credit Cell (RPCC) and Agricultural Refinance and Development Corporation (ARDC). The primary focus of NABARD is to serve as re-financing organization for the credit given by various financing agencies for promoting rural sector activities.
 - (vi) *Karnataka State Cooperative Apex Bank Limited (KSCAPEX Bank)*: KSCAPEX Bank is the apex organisation for rural development in the state of Karnataka and its purpose is to financially assist farmers, artisans, unskilled labourers and rural entrepreneurs by providing loan schemes - Kisan Credit Card and short-term finance.
 - (vii) *District Rural Development Agencies (DRDAs)*: The fundamental role of DRDAs is to implement the schemes and projects of Ministry of Rural Development at district level in various states. They are also responsible for handling and transferring rural development funds under sponsored schemes.

VI. Applications of ICT in Rural Development Areas

Information and Communication Technology has completely revolutionized the way information was perceived, generated, stored, retrieved, processed and transmitted earlier for a number of day-to-day work and tasks at individual level, community level, organization level, business level and administration level. Indeed, it has proven to be a boon for people in urban areas where ICT infrastructure like internet, mobile phones, laptops, PDAs, kiosks and services like digital media, e-commerce websites, e-governance portals, social networking, media and online knowledge resources (e-learning) has created a promising development in areas of information dissemination, social interaction, administrative work, economic and business practices, civic responsibilities, education, health, leisure, media and entertainment. On the similar grounds, ICT can contribute to the significant and sustainable growth of rural areas in different sectors by introducing new processes, services, applications and deployment of ICT infrastructure. Various applications of ICT in rural development sectors are as listed below:

a. ICT for agriculture sector - Agriculture is the main source of income and livelihood for most of the rural population in India, including Haryana. Increased land productivity increases employment opportunities for marginal farmers and labourers. At the same time, it leads to economic development of the area. However, agriculture sector involves uncertainties because of soil erosion, underground water table depletion, untimely rainfall and other climatic reasons. ICT can help farmers in numerous ways -

- i. Real-time communication (using mobile phones) - posing questions and doubts to agriculturists regarding irrigation, seed quality, climate, pest control and crop care. Farming involves risks and uncertainties, with farmers facing many threats from poor soils, drought, erosion and pests. ICTs can deliver useful information to farmers about agriculture like crop care and animal husbandry, fertilizer, pest control, seed sourcing and market prices. Example: IFFCO Kissan Sanchar Limited (Joint Venture between Airtel and Indian Farmer's Fertilizers Cooperative Limited (IFFCO)).
- ii. E-seminars (presentations or recorded videos) - can be accessed on topics related to agricultural interests (using Internet).
- iii. E-commerce platforms - can connect farmers to direct consumers and traders and will get them better market prices for crops.
- iv. Satellite technologies like Remote Sensing & Geographic Information System (GIS) can be used to find spatial and temporal variability of soil quality and for yield predictability and weather forecasting

b. ICT for Education sector

Education is considered the foundation of future generation. Better education opportunities will increase literacy rate in the rural areas and create better employment opportunities and technical knowledge amongst youth and other members of their family. Usage of ICT in rural education sector can prove a boon in following ways-

- a) Using computers and internet, online lectures, tutorials and presentations can be utilized as distance teaching and learning means.
- b) Using domestic tablets (Aakash), students can participate in various online quizzes and competitions and win scholarships.
- c) MOOCs (Massive Online Open Courses) have been started by reputed educational institutions around the world where rural students can also register, gain expertise in technical areas and obtain certifications without paying heavy fees.
- d) Lack of teachers and staff in remote schools can be compensated with recorded lectures of teaching faculties from other schools.
- e) Old age generation can be taught in their native places with the help of computer and other ICT aids.

c. ICT for Health services:

Medical aid and health care service is one of the fundamental amenities of any social setup. ICT can help in the betterment of available health facilities in rural areas-

- a) Remote consultation, diagnosis and treatment of patients using mobile phones and/or internet
- b) On-call or online guidance to medical personnel and staff of rural places for critical problems and specialized training.
- c) E-seminars and presentations can be organized by Panchayat Raj Institutions (PRIs) for rural community on health issues, nutrition, symptoms of diseases and preventive measures.

d. ICT for Business Sector:

Rural people can leverage ICT for establishing, supporting and enhancing their small to medium businesses or industries

a) Use of Internet facility can enable micro or small enterprise holders (poultry, dairy, manufacturing, textile etc.) to exchange product information and bill receipts from vendors/suppliers, access regulatory policy guidelines and transfer funds online.

Use ICT to take advantage of government subsidies and other schemes available for micro and small scale industries.

b) Community and FM radio stations can be used to advertise their products and services to rural as well as urban communities and expand their market beyond their areas of operation.

c) Collaboration to large industries and business firms can be established through ICT for better reachability of their products.

e. ICT for Social Awareness and Social Networking:

ICT has greatly contributed in minimizing geographical barriers and has brought rural, urban, tribal and isolated communities more closely to each other. By the means of social interactions through online platforms, rural areas can be benefited tremendously-

a) Community co-operation and unity for social causes through social media and social networking.

b) Faster dissemination of information and increased awareness on various issues of concern at the domestic level.

c) Better platform for rural people and communities to present real picture and their situations through social interactions.

f. ICT for Rural Administration:

Like e-governance initiative SWAN (State Wide Area Networks) to facilitate electronic access of the state and district administration services to the citizens in villages. There are lot of ways how government and administrative bodies can leverage ICT in rural areas for effective functioning-

a) Quick and easy dissemination of regulatory information, public notification and upcoming government schemes for rural people.

b) Transparency and visibility of administrative efforts to rural public with availability of digital information on online portals.

c) Better channelized mechanism of feedback, query and complaints from rural mass through online portals.

- d) Submission of income taxes, electricity bills and service taxes online through a nodal office with support staff in rural areas.
- e) Disaster management drills and activities using GIS, GPS based location information and ICT tools.

VII. Findings

ICTs have made considerable inroads into Karnataka's villages. Despite this, the study found that awareness about the potential for using ICTs and the stated need is limited. Children's education and procurement of government forms through Nemmadi, Bhoomi, Chethana are considered the most useful applications and people are ready to pay for these services. They are also open to paying a nominal fee for access to better health services and for awareness on health issues. The villagers showed interest in utilising the ICT infrastructure for entertainment purposes. It is necessary to have public participation, so that the system is sustainable irrespective of the budget allocations and therefore replicable. The non availability of electricity through most of the day in the villages is a major bottleneck. Every service provider has provided power back-up infrastructure for operating the systems for a maximum of four hours, which is not adequate.

VIII. Conclusion

In the conclusion of my study, Technological advances in ICTs have reduced the cost and increased the quantity and speed of information transfer dramatically. The use of ICT tools helps in strengthening different sectors of growth in rural areas including agriculture, education, self-employment, skill development, medical facilities & women empowerment. States like Karnataka has proved by adopting ICT in rural area for the development of different programs. ICT will continue to be a subject of increasing interest in the coming years for rural population in Karnataka. Government of Karnataka is still planning to increase its rural programs for betterment of rural development schemes and initiatives are still desired.

This paper highlighted some ICT technologies specially designed for application in rural sector considering cost, connectivity and knowledge base of potential end user. This paper also discussed the various applications of ICT in the fields concerning rural sector such as e-governance, rural administration, agriculture, rural education & women empowerment.

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